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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/689,699

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Hiroshi Kainuma

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RADER FISHMAN & GRAUER PLLC
LION BUILDING
1233 20TH STREET N.W., SUITE 501
WASHINGTON, DC 20036

EXAMINER

WEINSTEIN, LEONARD J

ART UNIT

PAPER NUMBER

3746

MAIL DATE

DELIVERY MODE

05/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/689,699	Applicant(s) KAINUMA ET AL.	
	Examiner LEONARD J. WEINSTEIN	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendment of March 7, 2008. In making the below rejections and/or objections the examiner has considered and addressed each of the applicant's arguments.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumagai et al. 6,250,600 in view of Umemura et al. US 2002/0098091. Kumagai discloses the following limitations as claimed including: a control valve for a variable capacity compressor 50 comprising a bellows main body 67, retained as a pressure sensing element in a bellows case 66 with an airtight structure, and transfers expansion and contraction of the bellows main body in response to a variation in inlet pressure 72 of a variable capacity compressor to a valve element 61 through a valve rod, 65 and 77, supported to be movable in a valve lifting direction from a valve housing 54 integral with said bellows case to thereby change a valve opening

Art Unit: 3746

degree, a patch member, 69 of 71, is provided to a movable-side end portion of the bellows main body and is formed with a fitting recessed portion 78, a valve rod 59 being fitted to be able to float in the fitting recessed portion, one end portion, bottom portion of element 59, of a valve rod 59 housed in the fitting recessed portion 78 of a patch member 69 in a tiltable manner, and a compression coil spring 70 disposed between the patch member and a lower patch member 68 for supporting a fixed-side end portion of the bellows main body; and a bottom portion of the fitting recessed portion forming a stopper face portion 71a that can come in contact with a stopper face portion formed at a central portion 75 of the lower patch member. Kumagai discloses the claimed invention except for the following limitation that is taught for a control valve by Umemura wherein an end portion of a valve rod 41 is roundly or hemispherically shaped, as shown in figure for with the distal end of element 42, and wherein the fitting recessed portion is formed such that a patch member 68 can be tilted with respect to the valve rod 42 (Umemura - ¶0055). Modifying a valve rod such as Kumagai so that it has a rounded surface at a distal end of a valve rod in contact with a patch member would substitute for a ball 77 of Kumagai while ensuring a force corresponding to the displacement of a bellows is reliably applied (Umemura - ¶0055). In addition a modification to Kumagai providing a valve rod with a rounded end surface would result in a reduction of parts. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a valve rod with a rounded end as taught by Umemura to reduce the number of components required to reliably apply the force generated by the displacement of a bellows of a control valve as taught by Kumagai (Umemura - ¶0055).

5. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi in view of Umemura et al. US 2002/0098091. Taguchi discloses all the limitations of the

Art Unit: 3746

invention as claimed including: a control valve for a variable capacity compressor 7, comprising a bellows main body 77 retained as a pressure sensing element in a bellows case 57 with an airtight structure, and transfers expansion and contraction of the bellows main body in response to a variation in inlet pressure 83 of the variable capacity compressor to a valve element 67 through a valve rod 61 supported to be movable in a valve lifting direction from a valve housing 63 integral with the bellows case to thereby change a valve opening degree, a patch member, T shaped member connected to bottom of element 73 which forms a fitting recessed portion, is provided to a movable-side end portion of the bellows main body 77, a valve rod 81 being fitted to be able to float in the fitting recessed portion 73, one end portion, bottom portion of element 81, of a valve rod 81 housed in the fitting recessed portion 73 of a patch member 71 in a tiltable manner, and a compression coil spring 79 disposed between the patch member and a lower patch member, T shaped member attached to the bottom of bellows 77 main body, for supporting a fixed-side end portion; a contact end portion of a valve rod 81 in contact with the fitting recessed portion 73 in a substantially central position in the expanding/contracting direction of the bellows main body; a fixed-side end portion of a bellows main body mounted to the lower patch member substantially in the same shape as the patch member with a lower T shaped member attached to bellows 77, a side face of the lower patch member supported on a support tube portion formed to stand from the bellows case 55, a stopper face portion formed at a central portion of the lower patch member, top-center area of lower T shaped member attached to bellows, supported on a support portion extending from an adjusting screw 75 member. Taguchi discloses the claimed invention except for an the following limitation that is taught for control valve by Umemura wherein an end portion of a valve rod 41 is roundly or hemispherically shaped, as shown in figure 4 with the distal end of element 42, and wherein the

Art Unit: 3746

fitting recessed portion 68, element 68 is recessed from an upward facing surface defined by the annular section designated as element 54a, is formed such that a patch member 68 can be tilted with respect to the valve rod 42 (Umemura - ¶0055). Modifying a valve rod such as Taguchi so that it has a rounded surface at a distal end of a valve rod in contact with a patch member would ensure a force corresponding to the displacement of a bellows is reliably applied (Umemura - ¶0055). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a valve rod with a rounded end as taught by Umemura in order to provide a control valve as taught by Taguchi for a variable displacement compressor that reliably applies a force generated by the displacement of a bellows (Umemura - ¶0055).

Response to Arguments

6. Applicant's arguments filed March 7, 2007 have been fully considered but they are not persuasive. With respect the rejection of claims 1 and 4 under 35 U.S.C. 103(a) as unpatentable over Kumagai et al. US 6,250,600 in view of Umenura et al. US 2002/0098091, the applicant argues that both Kumagai and Umenura do not teach a rounded hemispherical edge on an end of a valve rod and a fitting recess formed so a patch member can be tilted with respect to the valve rod.

With respect to applicant's argument that both Kumagai and Umenura do not teach a rounded hemispherical edge on an end of a valve rod and a fitting recess formed so a patch member can be tilted with respect to the valve rod, the examiner disagrees. As a matter of priority, the examiner notes that Kumagai was not relied upon to teach the specific feature of a valve rod having a rounded hemispherical surface, which applicant argues a combination of the references would fail to teach. However Kumagai does teach a fitting recess 78 that receives a ball 77 that engages the end face of a valve rod 65. The ball 77 is received in a rounded recess

Art Unit: 3746

78 on the surface of element 69. It is clear that the strap member 71 and end plate 69 would be able to tilt relative to the axis of the direction of movement of the valve rod and thus the valve rod itself, due to the rounded abutting surfaces of elements 78 and 77.

The examiner notes that Kumagai teaches all the limitations except for a valve rod with a rounded surface. Umemura was cited to show that the configuration for a control valve including valve rod that has a round hemispherical end that engages or is received by a round hemispherical surface on a patch member was a known configuration in the art. The examiner maintains that element 41 of Umemura teaches an end of a valve rod 42 with a round hemispherical surface in figure 4. Thus the examiner maintains that the embodiment of figure 4 of Umemura, teaches an end portion of a valve rod 41 roundly or hemispherically shaped, as shown at the distal end of element 42, and wherein the fitting recessed portion 68, as element 68 is recessed from an upward facing surface defined by the annular section designated as element 54a, is formed such that a patch member 68 can be tilted with respect to the valve rod 42 (Umemura - ¶0055). Umemura discloses the following in ¶0055:

"FIG. 4 illustrates a third embodiment of the present invention. The third embodiment is a modification of the first embodiment. In the third embodiment, the lower end surface 68a of the protrusion 68 is semispherical. In this case, the force corresponding to the displacement of the bellows 54 is reliably applied to the transmission rod 40 along the axis L even when the bellows 54 is inclined. Therefore, the control valve CV operates in a suitable manner. The upper end surface 41a of the distal end portion 41 may be semispherical."

It is clear from this disclosure that the configuration of Umemura including a valve rod with a rounded end provides an advantage, and establishes a motivation to modify the valve rod that is taught by Kumagai.

Further the examiner notes the applicant's assertion that that number of assembly processes of Kumagai is greater than that of the instant application. A combination of Umemura and Kumagai would in effect remove the ball element 77 from Kumagai and thus

Art Unit: 3746

reduce the total number of component parts of a control valve. The argument that the instant application has fewer assemblies than Kumagai is not material to why one of ordinary skill in the art would provide Kumagai with a valve rod with a rounded end surface. A comparison is not being made between Kumagai and the instant application in order to establish a motivation why one configuration is better or has fewer components than the other. The application of Kumagai to the limitations as claimed was set forth to show that the instant application is unpatentable as claimed.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD J. WEINSTEIN whose telephone number is (571)272-9961. The examiner can normally be reached on Monday - Thursday 7:00 - 5:30.

Art Unit: 3746

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit
3683

/Leonard J Weinstein/
Examiner, Art Unit 3746